



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,083	05/10/2001	Kenji Uchiyama	9319S-000204	5266
27572	7590	08/22/2002		EXAMINER
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			RUDE, TIMOTHY L	
			ART UNIT	PAPER NUMBER
			2871	
DATE MAILED: 08/22/2002				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/853,083	UCHIYAMA, KENJI
	Examiner	Art Unit
	Timothy L Rude	2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 22 March 2002.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-25 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ .
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .	6) <input type="checkbox"/> Other: _____ .

## DETAILED ACTION

1. Claims 1, 9, 12, 24, and 25 are amended.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

(e) the invention was described in–  
(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or  
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi et al (Takahashi) USPAT 6,266,119.

As to claim 1, amended, Takahashi discloses all recitations of the claim.

Takahashi discloses the nature of the alignment problem, the dimensional change due to process heating, and decreasing the error by finely adjusting a size of a mask used in the electrode pattern formation (col. 1, lines 51-67, and col. 2, lines 1-48, especially col.

2, lines 29-39) so the pitches become substantially equal to each other during the bonding process (dimensional error reduced to acceptable magnitude).

As to claims 14 and 15, Takahashi discloses all recitations of the claim. Takahashi discloses the nature of the alignment problem, the dimensional change due to process heating, and decreasing the error by finely adjusting a size of a mask used in the electrode pattern formation (col. 1, lines 51-67, and col. 2, lines 1-48, especially col. 2, lines 29-39) so the pitches become substantially equal to each other during the bonding process (dimensional error reduced to acceptable magnitude). Takahashi also discloses use of alignment marks on both base members with terminals therebetween (col. 9, lines 1-34 and Figure 6).

As to claims 3 and 16, Takahashi discloses the use of anisotropic conductive adhesive (col. 1, lines 51-55) and heating (col. 2, lines 29-34).

As to claims 4, 11, 17, and 23, Takahashi discloses the pitch error due to thermal expansion is greater for a flexible printed circuit (second terminal bank) is greater than that of glass (col. 2, lines 34-36), and Takahashi discloses a fine compensating adjustment (which would necessarily be to make the second terminal bank pitch smaller) to the electrode pattern formation (col. 2, lines 36-39).

As to claims 5-6 and 20-21, Takahashi discloses the use of polyimide film with a thickness of 15-75  $\mu\text{m}$  (col. 5, lines 11-19) which overlaps the claimed range.

Takahashi discloses the dimensional error due to process heating to be generally between 0.05% and 0.1% (col. 2, lines 35-39) which would necessitate a corresponding pitch reduction range that compares to the claimed range. The expansion coefficient range would be inherent to the film material, would vary accordingly, and would affect the thermal expansion and in turn the selected pitch compensation.

As to claims 7-8 and 18-19, Takahashi discloses the use of glass (col. 1, lines 51-53) and polyimide as an example material (col. 5, lines 15-19). Substitution of similar materials is not considered patentably distinct unless unexpected results are obtained.

As to claim 22, Takahashi discloses the use of an electro-optical device in a motion picture image display (col. 9, lines 56-59), which is an electronic equipment.

As to claims 9, amended, and 10, Takahashi discloses all recitations of the claim. Takahashi discloses the nature of the alignment problem, the dimensional change due to process heating, and decreasing the error by finely adjusting a size of a mask used in the electrode pattern formation (col. 1, lines 51-67, and col. 2, lines 1-48, especially col. 2, lines 29-39) so the pitches become substantially equal to each other during the bonding process (dimensional error reduced to acceptable magnitude).

As to claims 12, amended, 13, 24, amended, and 25, amended, Takahashi discloses values for the expansion factors, although he assigns different letters, and Takahashi discloses the fact that these are related to the temperature of the process (heat treatment) and the material type (expansion coefficient) (col. 1, lines 51-67, and col. 2, lines 1-48, especially col. 2, lines 29-39).

***Response to Amendment***

3. Applicant's arguments filed 22 March 2002 have been fully considered but they are not persuasive.

Applicant's ONLY arguments are as follows:

- (1) The disclosure of "finely adjusting a size of a mask used in the electrode pattern formation" is insufficient to anticipate the method of the claimed invention.
- (2) Takahashi teaches directly away from the claimed method. Takahashi discloses a connection sheet 37 disposed between electrodes 36a and 35a.
- (3) With respect to claim 12, the pitch of the second terminal bank is a/b times the pitch of the first terminal bank.
- (4) Takahashi does not define the dimensional error in terms of a ratio between two substrates.
- (5) Takahashi is completely silent with respect to the relative pitch of the first and second terminal banks before and after thermal compression bonding as claimed.

Examiner's responses to Applicant's ONLY arguments are as follows:

(1) It is respectfully pointed out that Takahashi discloses the nature of the alignment problem, the dimensional change due to process heating, and decreasing the error by finely adjusting a size of a mask used in the electrode pattern formation (col. 1, lines 51-67, and col. 2, lines 1-48, especially col. 2, lines 29-39) so the pitches become substantially equal to each other during the bonding process (dimensional error reduced to acceptable magnitude). It is also respectfully pointed out that the dimensional change that would inherently occur from heating is thermal expansion. Therefore, the only fine adjustment that would achieve Takahashi's invention would be to make the pitch smaller to compensate for the thermal expansion of the flexible printed circuit. Takahashi's disclosure is considered sufficient explanation of the thermal pitch change phenomenon and the method of compensation for said pitch change in that one of ordinary skill in the art of liquid crystals would know how to make and use the invention.

(2) It is respectfully pointed out that the connection sheet is the flexible printed circuit that undergoes thermal expansion during heat and pressure bonding to the glass substrate.

(3) It is respectfully pointed out that the recitation of the pitch of the second terminal bank is  $a/b$  times the pitch of the first terminal bank is merely a description of the resulting pitch adjustment needed to compensate for the expansion ratio of  $a/b$ . This is inherent to the expansion characteristics of the two materials.

(4) It is respectfully pointed out that Takahashi does not need to define the dimensional error in terms of a ratio between two substrates. It is clear that a ratio would exist, even if it were 1 to 1.

(5) It is respectfully pointed out that Takahashi clearly teaches the goal is to achieve identical pitch after thermal compression bonding in his description of the field of the invention and related art (col. 1, line 51 through col. 2, line 62, especially col. 1, lines 51-64). Takahashi's explanation of the thermally driven dimensional change issue is considered adequate disclosure of the invention for those of ordinary skill in the art of liquid crystals.

### ***Conclusion***

4. References cited but not applied are relevant to the instant application.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2871

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy L Rude whose telephone number is (703) 305-0418. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

Timothy L Rude  
Examiner  
Art Unit 2871

  
TLR  
August 12, 2002

  
TOANTON  
PRIMARY EXAMINER